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IMAGES IN INTERVENTION

# Thrombosis-Related Honeycomb-Like Structure in Non-Infarct-Related Artery in a COVID-19 Convalescent Patient Presenting With STEMI



Pawel Gasior, MD, PhD,<sup>a</sup> Krzysztof Bryniarski, MD, PhD,<sup>b</sup> Andrzej Ochala, MD, PhD,<sup>a</sup> Wojciech Wojakowski, MD, PhD<sup>a</sup>

A 59-year-old woman with no history of coronary artery disease and a history of heavy smoking, recently recovered (4 weeks previously) from a mild course of ambulatory treated coronavirus disease-2019 (COVID-19), was admitted to our clinic with the diagnosis of anterior wall ST-segment elevation myocardial infarction.

Significant hypercoagulability was observed previously in patients with COVID-19, and coagulation alterations persist despite antithrombotic treatment, seeming to peak around weeks 3 to 4 of the disease (1). Baseline angiography revealed multiple irregular filling defects with haziness in the medial right coronary artery (RCA) and an occluded proximal left anterior descending coronary artery (LAD) (Figures 1A and 1B). Primary percutaneous coronary intervention of the LAD was immediately performed with a drug-eluting stent (Xience, Abbott Vascular, Santa Clara, California) (Figure 1C). The patient was scheduled for optical coherence tomographic evaluation of the lesion in the RCA 48 h after the initial procedure (Figure 1D). Optical coherence tomography demonstrated multiple 20-mm-long small channels, varying in size, in communication with one another, with a minimal luminal diameter of the true lumen of 1 mm

(Figures 1E to 1G). This honeycomb-like appearance with channels separated by fibrous septa of high signal intensity and low attenuation is characteristic of recanalized thrombus.

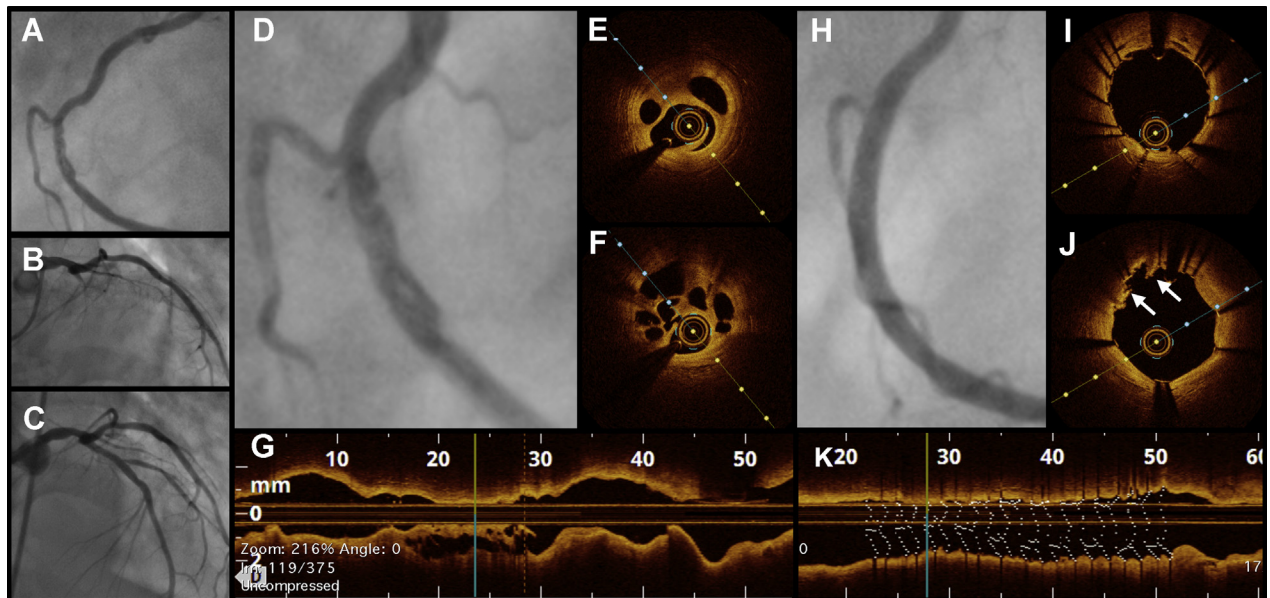
We decided to perform angioplasty of the medial segment of the RCA. After pre-dilatation with a non-compliant 2.5 × 15 mm balloon (Emerge, Boston Scientific, Marlborough, Massachusetts), a 3.0 × 28 mm drug-eluting stent (Xience) was implanted. Final angiography revealed an optimal result of angioplasty (Figure 1H). Furthermore, optical coherence tomography confirmed acceptable stent expansion of 93% and full coverage of the honeycomb-like structure with mild tissue protrusion (Figures 1I to 1K).

There is evidence that systemic inflammation and a hypercoagulable state during the course of COVID-19 can facilitate the rupture of pre-existing plaques, resulting in acute myocardial infarction (2). Furthermore, injury of the endothelium occurs from the direct invasion of endothelial cells by the virus particles, which might be responsible for thrombotic events (3). In the presented case, the hypercoagulable state in the convalescent phase of COVID-19 might have been responsible for thrombus formation and occlusion in the LAD and recanalized thrombus in the RCA.

From the <sup>a</sup>Division of Cardiology and Structural Heart Diseases, Medical University of Silesia, Katowice, Poland; and the <sup>b</sup>Jagiellonian University Medical College, Faculty of Medicine, Institute of Cardiology, Department of Interventional Cardiology, John Paul II Hospital, Krakow, Poland.

The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the [Author Center](#).

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**FIGURE 1** Findings on Coronary Angiography and OCT in the LAD and RCA

(A,B) Baseline coronary angiography revealed irregular filling defects with haziness in the right coronary artery (RCA) (A) and an occluded proximal left anterior descending coronary artery (LAD) (B). (C) The LAD after stent implantation. (D) Magnified view of the RCA showing irregular, hazy stenosis during the second procedure. (E to G) Optical coherence tomography (OCT) demonstrated multiple small channels of varying size with honeycomb-like appearance. (H) Angiography after stent implantation revealed a good angiographic result. (I to K) Final OCT demonstrated optimal stent expansion, compressed layer-like honeycomb structure (I), and mild irregular protrusion (J, arrows).

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**ADDRESS FOR CORRESPONDENCE:** Dr. Pawel Gasior, Division of Cardiology and Structural Heart Diseases, Medical University of Silesia, Ziolowa 45, 40-635 Katowice, Poland. E-mail: [p.m.gasior@gmail.pl](mailto:p.m.gasior@gmail.pl).

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